

automatica

A Journal of IFAC the International
Federation of Automatic Control

**Volume Contents, Author and
Key Word Indexes**

Volume 32 (1996)



Pergamon

automatica

A Journal of IFAC the International Federation of Automatic Control

EDITOR-IN-CHIEF

Professor Huibert Kwakernaak
Faculty of Applied Mathematics
University of Twente

Postal address:
P.O. Box 217, 7500 AE Enschede
The Netherlands

Street address:
Drienerlolaan 5, 7522 NB Enschede
The Netherlands
Tel. +31 53 4893457
Fax +31 53 4340733/4356695
E-mail automatica@math.utwente.nl

EDITORS

Control and Estimation Theory

(in particular optimal, stochastic and nonlinear control, games, state estimation, and discrete event systems)

Professor Tamer Başar
Deputy Editor-in-Chief
University of Illinois at Urbana-Champaign, Coordinated Science
Laboratory, 1308 West Main Street
Urbana, IL 61801, U.S.A.
Tel. +1 217 333 3607
Fax +1 217 244 1653
E-mail tbasar@decision.csl.uiuc.edu

Control System Applications

(including robotics, mechatronics, transportation and vehicles, power systems and safety)

Professor Katsuhisa Furuta
Department of Control Engineering
Tokyo Institute of Technology
2-12-1 Oh-Okayama, Meguro-ku
Tokyo 152, Japan
Tel. +81 3 726 111/2548
Fax +81 3 720 5269
E-mail furuta@ctrl.titech.ac.jp

Process Control and Computer Control Applications

Professor Sigurd Skogestad
Department of Chemical Engineering
Norwegian University of Science and Technology
N-7034 Trondheim, Norway
Tel. +47 735 94 154/130
Fax +47 735 94 080
E-mail skoge@kjemi.unit.no

System and Control Theory

(including robust control, distributed parameter systems and control system design)

Dr Roberto Tempo
CENS-CNR, Politecnico di Torino
Corso Duca Abruzzi 24
10129 Torino, Italy
Tel. +39 11 564 7034
Fax +39 11 564 7099
E-mail tempo@polito.it

Adaptive Control

(including applications, robotics, and new topics such as use of neural networks in this field)

Professor C. C. Hang
Deputy Vice-Chancellor's Office, National University of Singapore
10 Kent Ridge Crescent, Singapore 0511
Tel. +65 772 2434/776 2835
Fax +65 778 1851
E-mail dvchcc@leonis.nus.sg.

Large Scale Systems, Management and Decision Sciences

(including human factors, human-system interaction, expert systems, artificial decision support systems, infra-structure and environment modelling, management and control, management and economic systems, and systems and control education)

Professor Christine M. Mitchell
School of Industrial and Systems Engineering
Center for Human-Machine Systems Research
Georgia Institute of Technology
Atlanta, GA 30332-0205, U.S.A.
Tel. +1 404 894 4321
Fax +1 404 894 2301
E-mail mitchell@chmsr.gatech.edu

System Parameter Estimation

(including applications in this field, and new topics such as system fault detection)

Professor Torsten Söderström
Systems and Control Group, Uppsala University
P.O. Box 27, S-751 03 Uppsala, Sweden
Tel. +46 18 183075
Fax +46 18 503611
E-mail ts@syscon.uu.se

SPECIAL CATEGORY EDITORS

Survey Papers

(including all fields in automatic control)

Professor Manfred Morari
Automatic Control Laboratory, ETH-Zentrum/ETL I 29
CH-8092 Zürich, Switzerland
Tel. +41 1 632 7626
Fax +41 1 632 1211
E-mail morari@aut.ee.ethz.ch

Rapid Publications

Technical Communiques and Correspondence
(in all fields of control)

Professor Peter Dorato
Dept. of Electrical and Computer Engineering, University of New Mexico, Albuquerque, NM 87131, U.S.A.
Tel. +1 505 277 0299
Fax +1 505 277 1439
E-mail peter@eece.unm.edu

Book Reviews

(in all areas of interest related to automatic control)

Professor David J. Limebeer
Dept. of Electrical Engineering, Imperial College
Exhibition Road, London SW7 2BT, U.K.
Tel. +44 171 59 46634
Fax +44 171 59 46606
E-mail djnl@ps.ic.ac.uk

Volume Contents

Number 1 — January

	EDITORIAL
	1 AUTOMATICA and Applications Papers
	PAPERS
S. S. Mulgund and R. F. Stengel	3 Optimal Nonlinear Estimation for Aircraft Flight Control in Wind Shear
K. Yamalidou, J. Moody, M. Lemmon and P. Antsaklis	15 Feedback Control of Petri Nets Based on Place Invariants
Zongli Lin, A. A. Stoorvogel and A. Saberi	29 Output Regulation for Linear Systems Subject to Input Saturation
F. Matsuno, M. Hatayama, H. Senda, T. Ishibe and Y. Sakawa	49 Modeling and Control of a Flexible Solar Array Paddle as a Clamped-Free-Free Rectangular Plate
O. O. Badmus, S. Chowdhury and C. N. Nett	59 Nonlinear Control of Surge in Axial Compression Systems
É. Poulin, A. Pomerleau, A. Desbiens and D. Hodouin	71 Development and Evaluation of an Auto-tuning and Adaptive PID Controller
	BRIEF PAPERS
Z. Aganovic, Z. Gajic and Xuemin Shen	83 New Method for Optimal Control and Filtering of Weakly Coupled Linear Discrete Stochastic Systems
H. G. Natke and C. Cempel	89 Holistic Modelling as a Tool for the Diagnosis of Critical Complex Systems
C. Frangos and Y. Yavin	95 Feasible Control Design for Plants with Discrete-time Markov Jump Parameters
P. Martin, S. Devasia and B. Paden	101 A Different Look at Output Tracking: Control of a VTOL Aircraft
Der-Cherng Liaw and E. H. Abed	109 Active Control of Compressor Stall Inception: a Bifurcation-theoretic Approach
C. Kambhampati, S. Manchanda, A. Delgado, G. G. R. Green, K. Warwick and M. T. Tham	117 The Relative Order and Inverses of Recurrent Networks
	TECHNICAL COMMUNIQUEs
S. B. Phadke and M. M. Kuber	125 Comments on 'On Compensation for Neglected Actuator Dynamics'
F. Najson and E. Kreindler	127 Authors' Reply to Drs Phadke's and Kuber's Comments
M. I. Troparevsky	129 Adaptive Stabilization of Time-varying Discrete-time Linear Systems
Chi-Jo Wang	133 State Feedback Impulse Elimination of Linear Time-varying Singular Systems
	137 Biographical Notes on Contributors to this Issue

Number 2 — February

	EDITORIAL
	145 AUTOMATICA Review and Publication Times
	PAPERS
N. A. Kheir, K. J. Åström, D. Auslander, K. C. Cheok, G. F. Franklin, M. Masten and M. Rabins	147 Control Systems Engineering Education
F. L. Lewis and Kai Liu	167 Towards a Paradigm for Fuzzy Logic Control
W. P. Heath	183 Orthogonal Functions for Cross-directional Control of Web Forming Processes

Zi-Li Deng, Huan-Shui Zhang, Shu-Jun Liu and Lu Zhou	199	Optimal and Self-tuning White Noise Estimators with Applications to Deconvolution and Filtering Problems
G. Conte, L. Jetto, S. Longhi and A. M. Perdon	217	BRIEF PAPERS
Tongwen Chen and B. A. Francis	223	Exact Output Control for a Family of Linear Plants with Parameter Uncertainties
T. G. Koussioris and K. G. Tzlerakis	229	\mathcal{H}_∞ -optimal Sampled-data Control: Computation and Design
J. K. Sabiti	235	Frequency-domain Conditions for Disturbance Rejection and Decoupling with Stability or Pole Placement
F. Dufour and P. Bertrand	241	A Fast Estimation Method for ARMA Processes
A. V. B. Subrahmanyam, D. C. Saha and G. P. Rao	249	An Image-based Filter for Discrete-time Markovian Jump Linear Systems
B. L. de la Barra, M. El-Khoury and M. Fernández	255	Irreducible Continuous Model Identification via Markov Parameter Estimation
A. Datta and J. Ochoa	261	On Undershoot in Scalar Discrete-time Systems
P. Misra	267	Adaptive Internal Model Control: Design and Stability Analysis
S. S. Ge	273	Time-invariant Representation of Discrete Periodic Systems
Jian-Xin Xu and H. Hashimoto	279	Adaptive Controller Design for Flexible Joint Manipulators
S. B. Phadke	285	VSS Theory-based Parameter Identification Scheme for MIMO Systems
Chi-Man Kwan	287	CORRESPONDENCE ITEMS
B. Bona	289	Comments on 'Sliding Mode Control of Linear Systems with Mismatched Uncertainties'
G. van Straten and K. J. Keesman	290	Author's Reply to Dr Phadke's Comments
C. Downing	293	BOOK REVIEWS
	295	<i>Intelligent Seam Tracking for Robotic Welding</i> by N. Nayak and A. Ray
		<i>Concise Encyclopedia of Environmental Systems</i> by P. C. Young
		SOFTWARE REVIEW
		<i>Adaptech PIM + TR</i>
		Biographical Notes on Contributors to this Issue

Number 3 — March

R. Tenno and P. Uronen	303	EDITORIAL
T. K. Gustafsson and P. M. Mäkilä	305	Electronic Text Processing, <i>AUTOMATICA</i> and Elsevier
T. A. Johansen	319	PAPERS
J. W. van der Woude	337	State Estimation for a Large-scale Wastewater Treatment System
V. L. Kharitonov	357	Modelling of Uncertain Systems via Linear Programming
H. M. Oloomi and M. E. Sawan	365	Identification of Non-linear Systems using Empirical Data and Prior Knowledge—An Optimization Approach
V. Eldem	369	BRIEF PAPERS
M. B. Rosenhaus	379	Disturbance Decoupling by Measurement Feedback for Structured Transfer Matrix Systems
B. Ninness	385	Robust Stability of Nested Polynomial Families
M. W. McConley	391	H_∞ Model Matching Problem for Singularly Perturbed Systems
Jenq-Tzong H. Chan	399	Decoupling through Specified Input-Output Channels with Internal Stability
R. Bakker and A. M. Annaswamy	403	Construction of a Fault Location Algorithm
M. J. Chapman and K. R. Godfrey	409	Integral Constraints on the Accuracy of Least-squares Estimation
M. M. Polycarpou and P. A. Ioannou	419	A Separate Bias U - D Factorization Filter
B. Lindoff and J. Holst	423	Data-based Synthesis of a Multivariable Linear-Quadratic Regulator
	429	Low-order Multivariable Adaptive Control with Application to Flexible Structures
		Nonlinear Compartmental Model Indistinguishability
		A Robust Adaptive Nonlinear Control Design
		Exact Distribution and Moments for the RLS Estimate in a Time-varying AR(1) Process

Jun Wang and Guang Wu	435	A Multilayer Recurrent Neural Network for On-line Synthesis of Minimum-norm Linear Feedback Control Systems via Pole Assignment
B. Siciliano and L. Villani	443	A Passivity-based Approach to Force Regulation and Motion Control of Robot Manipulators
G. Ferretti, C. Maffezzoni and R. Scattolini	449	On the Identifiability of the Time Delay with Least-squares Methods
R. Ortega, P. J. Nicklasson and G. Espinosa-Pérez	455	On Speed Control of Induction Motors
		TECHNICAL COMMUNIQUEs
W. Q. Liu, W. Y. Yan and K. L. Teo	461	Initial and Transient Response Improvement for Singular Systems
Chang-Jun Seo and Byung Kook Kim	465	Robust and Reliable H_∞ Control for Linear Systems with Parameter Uncertainty and Actuator Failure
S. P. Chan	469	An Approach to Perturbation Compensation for Variable Structure Systems
A. El Kashlan and M. El Geneidy	475	Design of Decentralized Control for Symmetrically Interconnected Systems
	477	Biographical Notes on Contributors to this Issue

Number 4 — April

		PAPERS
M. Araki, Y. Ito and T. Hagiwara	483	Frequency Response of Sampled-data Systems
G. I. Gómez and G. C. Goodwin	499	Integral Constraints on Sensitivity Vectors for Multivariable Linear Systems
P. Howlett	519	Optimal Strategies for the Control of a Train
K. Kristinsson and G. A. Dumont	533	Cross-directional Control on Paper Machines using Gram Polynomials
K. S. Tsakalis	549	Performance Limitations of Adaptive Parameter Estimation and System Identification Algorithms in the Absence of Excitation
		BRIEF PAPERS
Chun-Bo Feng and Yu-Qiang Wu	561	A Design Scheme of Variable Structure Adaptive Control for Uncertain Dynamic Systems
F. N. Koumboulis	569	Input-Output Triangular Decoupling and Data Sensitivity
S. O. R. Moheimani and I. R. Petersen	575	Optimal Guaranteed Cost Control of Uncertain Systems via Static and Dynamic Output Feedback
Jang-Lee Hong and Ching-Cheng Teng	581	A Derivation of the Glover-Doyle Algorithms for General H^∞ Control Problems
A. Baños	591	Stabilization of Nonlinear Systems Based on a Generalized Bézout Identity
G. De Nicolao, R. Scattolini and G. Sala	597	An Adaptive Predictive Regulator with Input Saturations
A. V. Savkin and I. R. Petersen	603	Model Validation for Robust Control of Uncertain Systems with an Integral Quadratic Constraint
Xiaohua Xia	607	A Parameterization Approach to Disturbance Decoupling Problem with Stability of Nonlinear Systems
Youyi Wang and D. J. Hill	611	Robust Nonlinear Coordinated Control of Power Systems
Z. Lin, A. Saberi and A. R. Teel	619	The Almost Disturbance Decoupling Problem with Internal Stability for Linear Systems Subject to Input Saturation—State Feedback Case
M. Krstić and P. V. Kokotović	625	Modular Approach to Adaptive Nonlinear Stabilization
P. Castaldi and U. Soverini	631	Identification of Dynamic Errors-in-variables Models
Shaohua Tan and Yi Yu	637	Adaptive Fuzzy Modeling of Nonlinear Dynamical Systems
Jun-ichi Imura, T. Sugie and T. Yoshikawa	645	A Hamilton-Jacobi Inequality Approach to the Strict H_∞ Control Problem of Nonlinear Systems
		TECHNICAL COMMUNIQUEs
A. Hmamed	651	Componentwise Stability of Continuous-time Delay Linear Systems
N. K. Bose	655	Edge Property from End-points for Scattering Hurwitz Polynomials
		BOOK REVIEWS
M. Thoma	659	<i>Process Control Engineering</i> edited by M. Polke
P. Bernhard	660	<i>Advances in Dynamic Games and Applications</i> edited by T. Başar and A. Haurie
	663	Biographical Notes on Contributors to this Issue

Number 5 — May

J.-M. Coron and E.-Y. Keraï	669	PAPERS
B. Armstrong and B. Amin	679	Explicit Feedbacks Stabilizing the Attitude of a Rigid Spacecraft with Two Control Torques
B. Wahlberg and P. M. Mäkilä	693	PID Control in the Presence of Static Friction: A Comparison of Algebraic and Describing Function Analysis
A. Lindquist and G. Picci	709	On Approximation of Stable Linear Dynamical Systems using Laguerre and Kautz Functions
R. A. Freeman and P. V. Kokotović	735	Canonical Correlation Analysis, Approximate Covariance Extension, and Identification of Stationary Time Series
A. H. W. (Ton) Geerts and J. M. Schumacher	747	Tracking Controllers for Systems Linear in the Unmeasured States
D. E. Miller	759	Impulsive-Smooth Behavior in Multimode Systems Part I: State-space and Polynomial Representations
		A Tradeoff Between Period and Order of Linear Periodic Stabilizing Compensators
		BRIEF PAPERS
Tzuen-Lih Chern, Chin-Wen Chuang and Rong-Lin Jiang	773	Design of Discrete Integral Variable Structure Control Systems and Application to a Brushless DC Motor Control
Liuping Wang and W. R. Cluett	781	Use of PRESS Residuals in Dynamic System Identification
B. E. A. Milani and C. E. T. Dórea	785	On Invariant Polyhedra of Continuous-time Systems Subject to Additive Disturbances
Tae-Yong Kuc and Jin Soo Lee	791	Learning Strictly Positive Real Linear Systems with Uncertain Parameters and Unknown Input Disturbances
		TECHNICAL COMMUNIQUE
A. Tzes and Ke Le	793	Weighted Minimum Uncertainty Prediction Control
Kuo-Kai Shyu and Shang-Ru Chen	797	Estimation of Asymptotic Stability Region and Sliding Domain of Uncertain Variable Structure Systems with Bounded Controllers
	801	Biographical Notes on Contributors to this Issue

Number 6 — June

	805	EDITORIAL
		AUTOMATICA Cumulative Contents and Indexes 1963-1995
		PAPERS
L. Saydy	807	New Stability/Performance Results for Singularly Perturbed Systems
A. H. W. (Ton) Geerts and J. M. Schumacher	819	Impulsive-Smooth Behavior in Multimode Systems Part II: Minimality and Equivalence
Chiang-Ju Chien, King-Chuan Sun, A-Chen Wu and Li-Chen Fu	833	A Robust MRAC Using Variable Structure Design for Multivariable Plants
M. C. Campi	849	The Problem of Pole-Zero Cancellation in Transfer Function Identification and Application to Adaptive Stabilization
M. Staroswiecki and M. Bayart	859	Models and Languages for the Interoperability of Smart Instruments
H. G. M. Dötsch and P. M. J. Van den Hof	875	Test for Local Structural Identifiability of High-order Non-linearly Parametrized State Space Models
T. McKelvey, H. Akçay and L. Ljung	885	Subspace-based Identification of Infinite-dimensional Multivariable Systems from Frequency-response Data
		BRIEF PAPERS
C. M. Kwan, F. L. Lewis and K. S. Yeung	903	Adaptive Control of Induction Motors without Flux Measurements
H. N. Duong and I. D. Landau	909	An IV Based Criterion for Model Order Selection
Wei Lin	915	Global Asymptotic Stabilization of General Nonlinear Systems with Stable Free Dynamics via Passivity and Bounded Feedback

Wu-Chung Su, S. V. Drakunov and Ü. Özgüner	925	Constructing Discontinuity Surfaces for Variable Structure Systems: A Lyapunov Approach
Wei Zhan and Le Yi Wang	929	Disturbance Attenuation via State Feedback for Systems with a Saturation Nonlinearity in the Control Channel
		TECHNICAL COMMUNIQUEs
Zongli Lin, A. Saberi, M. Gutmann and Y. A. Shamash	933	Linear Controller for an Inverted Pendulum Having Restricted Travel: A High- and Low-gain Approach
A. Loria and R. Ortega	939	Force/Position Regulation for Robot Manipulators with Unmeasurable Velocities and Uncertain Gravity
		BOOK REVIEWS
H. L. Trentelman	945	<i>Feedback Control Systems</i> by J. van de Vegte
J. Štecha	946	<i>Modeling of Dynamic Systems</i> by L. Ljung and T. Glad
A. Rantzer	947	<i>Control of Uncertain Systems: A Linear Programming Approach</i> by M. A. Dahleh and I. J. Diaz-Bobillo
G. Honderd	948	<i>Iterative Learning Control for Deterministic Systems</i> by K. L. Moore
	951	Biographical Notes on Contributors to this Issue

Number 7 — July

		EDITORIAL
	957	New Editorial Appointments
		PAPERS
I. R. Petersen and M. R. James	959	Performance Analysis and Controller Synthesis for Nonlinear Systems with Stochastic Uncertainty Constraints
F. Berthier, J.-P. Diard, L. Pronzato and E. Walter	973	Identifiability and Distinguishability Concepts in Electrochemistry
Er-Wei Bai, K. M. Nagpal and R. Tempo	985	Bounded-error Parameter Estimation: Noise Models and Recursive Algorithms
		BRIEF PAPERS
A. V. Savkin and I. R. Petersen	1001	Robust Control with a Terminal State Constraint
P. Gahinet	1007	Explicit Controller Formulas for LMI-based H_∞ Synthesis
O. M. Grasselli, S. Longhi, A. Tornambè and P. Valigi	1015	Robust Output Regulation and Tracking for Linear Periodic Systems under Structured Uncertainties
A. N. Gündes and M. G. Kabuli	1021	Reliable Stabilization with Integral Action in Decentralized Control Systems
P. Albertos, J. Salt and J. Tornero	1027	Dual-rate Adaptive Control
B. D. O. Anderson, M. Deistler and W. Scherrer	1031	Solution Set Properties for Static Errors-in-variables Problems
Feng Zhao and V. I. Utkin	1037	Adaptive Simulation and Control of Variable-structure Control Systems in Sliding Regimes
K. Szafrnicki and D. Graillot	1043	Knowledge-based Real-time Fault Detection and Supervision of Urban Drainage Systems
L. Chisci, A. Garulli and G. Zappa	1049	Recursive State Bounding by Parallelotopes
J. Kong and J. H. Seo	1057	Graph-theoretic Characterization of Fixed Modes in Frequency Domain
Chih-Min Lin and Maan-Huang Tu	1061	Multivariable Model Reference Linear Quadratic Optimal Systems
K. V. Ling and K. W. Lim	1067	A State Space GPC with Extensions to Multirate Control
		TECHNICAL COMMUNIQUEs
H. H. Choi and M. J. Chung	1073	Observer-based H_∞ Controller Design for State Delayed Linear Systems
Mao-Lin Ni and Ying Chen	1077	Decentralized Stabilization and Output Tracking of Large-scale Uncertain Systems
D. Mehdi, M. Al Hamid and F. Perrin	1081	Robustness and Optimality of Linear Quadratic Controller for Uncertain Systems
Z. Lin, A. Saberi, P. Sannuti and Y. A. Shamash	1085	Perfect Regulation of Linear Discrete-time systems: A Low-gain-based Design Approach
	1093	Biographical Notes on Contributors to this Issue

Number 8 — August

	1099	EDITORIAL AUTOMATICA Prize Paper Awards 1996
		PAPERS
M. Abrishamchian and B. R. Barmish	1101	Reduction of Robust Stabilization Problems to Standard H^∞ Problems for Classes of Systems with Structured Uncertainty
K. M. Grigoriadis and R. E. Skelton	1117	Low-order Control Design for LMI Problems Using Alternating Projection Methods
J. Hu and D. M. Dawson	1127	Adaptive Control of Induction Motor Systems Despite Rotor Resistance Uncertainty
M. L. Tyler and M. Morari	1145	Performance Monitoring of Control Systems using Likelihood Methods
V. F. Sokolov	1163	Closed-loop Identification for the Best Asymptotic Performance of Adaptive Robust Control
		BRIEF PAPERS
J. D. Finney and B. S. Heck	1177	Matrix Scaling for Large-scale System Decomposition
Jian-Hua Ge, P. M. Frank and Ching-Fang Lin	1183	Robust H_∞ State Feedback Control for Linear Systems with State Delay and Parameter Uncertainty
Jianliang Wang and N. Sundararajan	1187	Extended Nonlinear Flight Controller Design for Aircraft
Sing Kiong Nguang and Minyue Fu	1195	Robust Nonlinear \mathcal{H}_∞ Filtering
A. Saberi, P. Sannuti and A. A. Stoorvogel	1201	H_2 Optimal Controllers with Measurement Feedback for Continuous-time Systems—Flexibility in Closed-loop Pole Placement
Zhong-Ping Jiang, I. M. Y. Mareels and Yuan Wang	1211	A Lyapunov Formulation of the Nonlinear Small-gain Theorem for Interconnected ISS Systems
L. Jaulin and É. Walter	1217	Guaranteed Tuning, with Application to Robust Control and Motion Planning
P. J. Gawthrop, R. W. Jones and D. G. Sbarbaro	1223	Emulator-based Control and Internal Model Control: Complementary Approaches to Robust Control Design
		TECHNICAL COMMUNIQUEs
E. T. Jeung, D. C. Oh, J. H. Kim and H. B. Park	1229	Robust Controller Design for Uncertain Systems with Time Delays: LMI Approach
A. Moser	1233	Extending the Domain of Definition of Functional Series for Nonlinear Systems
		BOOK REVIEWS
C. G. Källström	1235	<i>Guidance and Control of Ocean Vehicles</i> by T. I. Fossen
H. V. Poor	1235	<i>Detection of Abrupt Changes: Theory and Application</i> by M. Basseville and I. V. Nikiforov
	1237	Biographical Notes on Contributors to this Issue

Number 9 — September

		PAPERS
J. Hernandez and J.-P. Barbot	1243	Sliding Observer-based Feedback Control for Flexible Joints Manipulator
A. Tesi, E. H. Abed, R. Genesio and H. O. Wang	1255	Harmonic Balance Analysis of Period-doubling Bifurcations with Implications for Control of Nonlinear Dynamics
L. El Ghaoui and G. Scroletti	1273	Control of Rational Systems using Linear-fractional Representations and Linear Matrix Inequalities
B. R. Maner, F. J. Doyle III, B. A. Ogunnaike and R. K. Pearson	1285	Nonlinear Model Predictive Control of a Simulated Multivariable Polymerization Reactor Using Second-order Volterra Models
		BRIEF PAPERS
F. Chaplais and K. Alaoui	1303	Two Time Scaled Parameter Identification by Coordination of Local Identifiers
G. W. Pulford and R. J. Evans	1311	Probabilistic Data Association for Systems with Multiple Simultaneous Measurements

A. Matasov and V. Samokhvalov	1317	Guaranteeing Parameter Estimation with Anomalous Measurement Errors
R. W. Aldhaferi and H. K. Khalil	1323	Effect of Unmodeled Actuator Dynamics on Output Feedback Stabilization of Nonlinear Systems
TECHNICAL COMMUNIQUE		
A. Ailon and R. Lozano	1329	Controller-Observers for Set-point Tracking of Flexible-joint Robots Including Coriolis and Centripetal Effects in Motor Dynamics
V. V. Patel	1333	On Least-degree Unit Interpolation in RH_∞
Jong Hae Kim, Eun Tae Jeung and Hong Bae Park	1337	Robust Control for Parameter Uncertain Delay Systems in State and Control Input
BOOK REVIEW		
G. J. Olsder	1341	<i>Foundations of Game Theory: Noncooperative Games</i> by N. N. Vorob'ev
	1343	Biographical Notes on Contributors to this Issue

Number 10 — October

	1347	EDITORIAL
PAPERS		
S. Dasgupta and B. D. O. Anderson	1349	A Parametrization for the Closed-loop Identification of Nonlinear Time-varying Systems
M. V. Kothare, V. Balakrishnan and M. Morari	1361	Robust Constrained Model Predictive Control using Linear Matrix Inequalities
F. Paganini	1381	Robust Stability under Mixed Time-varying, Time-invariant and Parametric Uncertainty
P. A. S. de Wit, R. Ortega and I. Mareels	1393	Indirect Field-oriented Control of Induction Motors is Robustly Globally Stable
R. Kulhavý and F. J. Kraus	1403	On Duality of Regularized Exponential and Linear Forgetting
Fen Wu	1417	Induced \mathcal{L}_2 Norm Model Reduction of Polytopic Uncertain Linear Systems
BRIEF PAPERS		
Quan-Gen Zhou and W. R. Cluett	1427	Recursive Identification of Time-varying Systems via Incremental Estimation
R. Rothfuss, J. Rudolph and M. Zeitz	1433	Flatness Based Control of a Nonlinear Chemical Reactor Model
B. Kouvaritakis, J. R. Gossner and J. A. Rossiter	1441	A Priori Stability Conditions for an Arbitrary Number of Unstable Poles
C. Marsh and Hao Wei	1447	Robustness Bounds for Systems with Parametric Uncertainty
A. Ailon	1455	Output Controllers Based on Iterative Schemes for Set-point Regulation of Uncertain Flexible-joint Robot Models
M. M. Kogan and J. I. Neimark	1463	Locally Optimal Adaptive Control without Persistent Excitation
G. Feng, S. G. Cao and N. W. Rees	1469	An Approach to H_∞ Control of a Class of Nonlinear Systems
TECHNICAL COMMUNIQUE		
G. De Nicolao, L. Magni and R. Scattolini	1475	Robust Predictive Control of Systems with Uncertain Impulse Response
BOOK REVIEW		
H. Kashiwagi	1481	<i>Identification of Multivariable Industrial Processes, for Simulation, Diagnosis and Control</i> by Y. Zhu and T. Backx
	1483	Erratum
	1485	Biographical Notes on Contributors to this Issue

Number 11 — November

	1491	EDITORIAL
PAPERS		
J. Reiner, G. J. Balas and W. L. Garrard	1493	Flight Control Design Using Robust Dynamic Inversion and Time-scale Separation

T. J. Harris, F. Boudreau and J. F. Macgregor	1505	Performance Assessment of Multivariable Feedback Controllers
R. Curtain, G. Weiss and M. Weiss	1519	Coprime Factorization for Regular Linear Systems
K. Hashtrudi-Zaad and K. Khorasani	1533	An Integral Manifold Approach to Tracking Control for a Class of Non-minimum Phase Linear Systems Using Output Feedback
P. D. Christofides and P. Daoutidis	1553	Compensation of Measurable Disturbances for Two-time-scale Nonlinear Systems
		BRIEF PAPERS
K. B. Datta and V. V. Patel	1575	H_∞-based Synthesis for a Robust Controller of Interval Plants
Xin Xin, Lei Guo and Chunbo Feng	1581	Reduced-order Controllers for Continuous and Discrete-time Singular H^∞ Control Problems Based on LMI
N. L. C. Chui and J. M. Maciejowski	1587	Realization of Stable Models with Subspace Methods
D. Yu and D. N. Shields	1597	A Bilinear Fault Detection Observer
Guang-Hong Yang and Si-Ying Zhang	1603	Decentralized Robust Control for Interconnected Systems with Time-varying Uncertainties
C. A. Schwartz and Aiguo Yan	1609	Smooth Stabilization of Nonlinear Control Systems
		TECHNICAL COMMUNIQUEs
M. De Neyer and R. Gorez	1613	Comments on 'Practical Design of Nonlinear Fuzzy Controllers with Stability Analysis for Regulating Processes with Unknown Mathematical Models'
H. Ying	1615	Author's Reply to M. De Neyer and R. Gorez's Comments
		BOOK REVIEWS
B. Delyon	1617	<i>Adaptive IRR Filtering in Signal Processing and Control</i> by Phillip A. Regalia
Shaohua Tan	1618	<i>NeuroFuzzy Adaptive Modelling and Control</i> by Martin Brown and Chris Harris
P. Young and W. Tych	1619	<i>Operational Control of Ground Water Systems: Structures, Algorithms and Applications</i> by M. A. Brdys and B. Ulanicki
	1621	Biographical Notes on Contributors to this Issue

Number 12 — December

	1627	EDITORIAL
		PAPERS
S. Jagannathan and F. L. Lewis	1629	Robust Implicit Self-tuning Regulator: Convergence and Stability
B. Hanzon and J. M. Maciejowski	1645	Constructive Algebra Methods for the L_2-Problem for Stable Linear Systems
H. Hjalmarsson, M. Gevers and F. De Bruyne	1659	For Model-based Control Design, Closed-loop Identification Gives Better Performance
Tzyh-Jong Tarn, Ning Xi and A. K. Bejczy	1675	Path-based Approach to Integrated Planning and Control for Robotic Systems
T. McKelvey, T. Abrahamsson and L. Ljung	1689	Vibration Data Analysis for a Commercial Aircraft
		BRIEF PAPERS
Yonghong Tan and A. Van Cauwenberghe	1701	Nonlinear One-step-ahead Control Using Neural Networks: Control Strategy and Stability Design
S. Jagannathan and F. L. Lewis	1707	Identification of Nonlinear Dynamical Systems Using Multilayered Neural Networks
Wei Lin and Liyi Dai	1713	Solutions to the Output Regulation Problem of Linear Singular Systems
M. Kárný	1719	Towards Fully Probabilistic Control Design
E. Tissir and A. Hmamed	1723	Further Results on Stability of $\dot{x}(t) = Ax(t) + Bx(t - \tau)$
B. G. Romanchuk	1727	Computing Regions of Attraction with Polytopes: Planar Case
M. Vukobratović and D. Katić	1733	Stabilizing Position/Force Control of Robots Interacting with Environment by Learning Connectionist Structures
T. Sasagawa and J. L. Willems	1741	Parametrization Method for Calculating Exact Stability Bounds of Stochastic Linear Systems with Multiplicative Noise
		TECHNICAL COMMUNIQUEs
A. İftar and Ü. Özgüner	1749	A Game Theoretic Approach to the Optimal Control of Uncertain Systems
Wei Xing Zheng	1753	Identification of Closed-loop Systems with Low-order Controllers

Li Yu, Jian Chu and Hongye Su	1759	Robust Memoryless H_∞ Controller Design for Linear Time-delay Systems with Norm-bounded Time-varying Uncertainty
	1763	Biographical Notes on Contributors to this Issue
	1769	List of Reviewers for <i>Automatica</i>, 1996
	I	Volume Contents, Author and Key Word Indexes for Volume 32, 1996

